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Rail Road News.

De Grand's Railroad from St. Louis to the Pacific.

A number of plans to build a railroad to the Pacific, to connect the Atlantic with the great Western Ocean, by a direct route through this continent, and through our own territory, have been proposed. Among these, Whitney's and De Grand's have received the most attention. Whitney's plan was explained in our second volume, and our readers are therefore well acquainted with it. De Grand's plan is different. He proposes that a company of men, of known integrity, should receive a charter from Congress to construct the road, they having an estimated capital of $100,000,000, and that with the payment of $2,000,000, they shall be allowed to borrow United States 6 per cent. Stock to the amount of $98,000,000. In other words, the United States is to advance $98,000,000 to complete the road—a double track. He also proposes that Congress shall grant the company a strip of land, 10 miles wide, on the north side of the road, (north or south we think is of no great consequence.)—This, Mr. De Grand in his pamphlet says, is the principal feature of his plan. "It will not take away private capital, and will be free from the risk of halting.

The plan is shrewd in one respect, for it provides a way to construct the road upon artificial capital. He also proposes that the road shall be constructed of separate gangs of men, who shall, at various points on the route, commence operations, and work day and night, 8 hours each set, until the work is completed. He also sets his foot against the use of any stimulating drinks to be given to the men.—A telegraph is also to be constructed along the route; and it is provided that the materials to be used in its construction shall be exclusively of American manufacture.

The plan is at least a very ingenious one, to build the road, and not flounder on the mistake of British Railroad capitalists, who took the funds out of one business to speculate on another, and thus, for three years, they have prostrated both the manufacturing and railroad interests of that country.

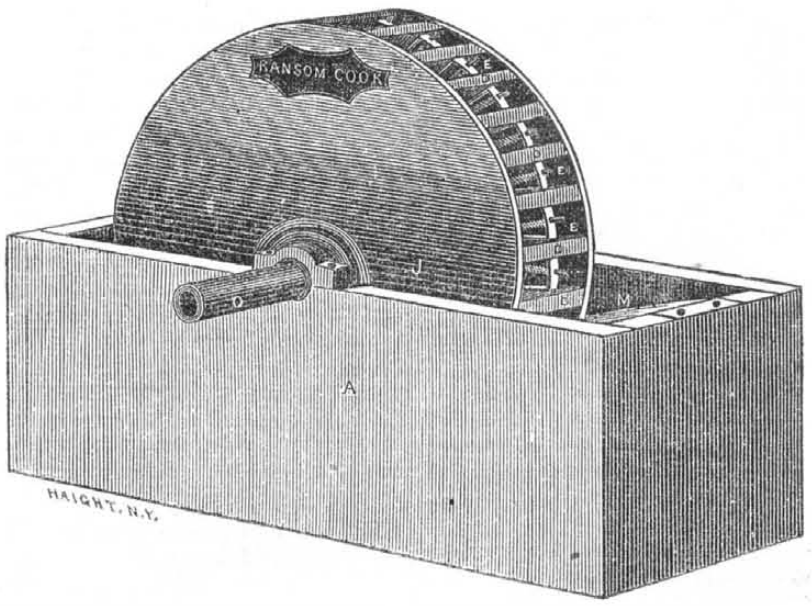
Railroads vs. Steamboats.

The Boston Traveller says that during the last summer much was said about the opposition of the Hingham steamboat and the Southshore Railroad. Last spring, when the steamboat commenced running, it was in debt $2,900; now, $6,000. Last summer the boat carried 9,000 passengers less than the previous summer, and only paid the running expenses. The conclusion was obvious, the steamboat cannot run against railroads. The fare on each was 12½ cts.

Mr. Moore has obtained a verdict against the Auburn and Syracuse Railroad of $2000, for being scalded when a collision took place on that road in 1848.

The Railroad between Cincinnati and Xenia, the capital of Ohio, will be completed by about the 1st of March.

THE HYDROSTATIC BLOWING PIPE.---Fig 1.



This is a recent invention of Ransom Cook, of Saratoga Springs, and is intended as a substitute for the machines now in use, for producing the necessary blast of air required in smelting and heating operations. It adds another to the very beautiful illustrations of the efficacy and simplicity with which the properties of matter are often found to serve us when properly applied to the arts. We have many mechanical movements heretofore,—thought essential to the object here persued entirely dispensed with; thus saving, not only the cost of their construction, but the great loss of power occasioned by their friction when in use. No mechanical skill can aspire to the manufacture of a piston which would fit and move with the ease of water, and yet so light as to prevent any loss of air.

The nearest approach to this machine in principle, with which we are acquainted, is that of the tubes attached to the ends of a working beam and alternately plunged in the water. But that plan was attended with so many difficulties in its application that it never came much in use—Mr. Cook's machine has obviated all of them.

A fall of water is sometimes used to produce a blast, which is probably best applied in what is called the Tromp. But so high a fall is required, and so small a return is received for the power used that it is seldom employed.

Fig. 1, is a perspective view of the wheel and cistern, in which A, represents the cistern or flume; J, one head of the drum or wheel; O, the shaft; M, the apron; D, D, D, partitions between the air cells; E, E, E, the exterior valves.

Fig. 2, is a sectional view of the wheel and cistern, in which N, N, N, N, show the apertures in the shaft; B, B, the receiver or reservoir for air; H, H, H, the interior valves; K, K, K, spiral springs on the valve stems; C, C, C, the hoof or bond forming the face or periphery of the drum or receiver.

Figure 2.

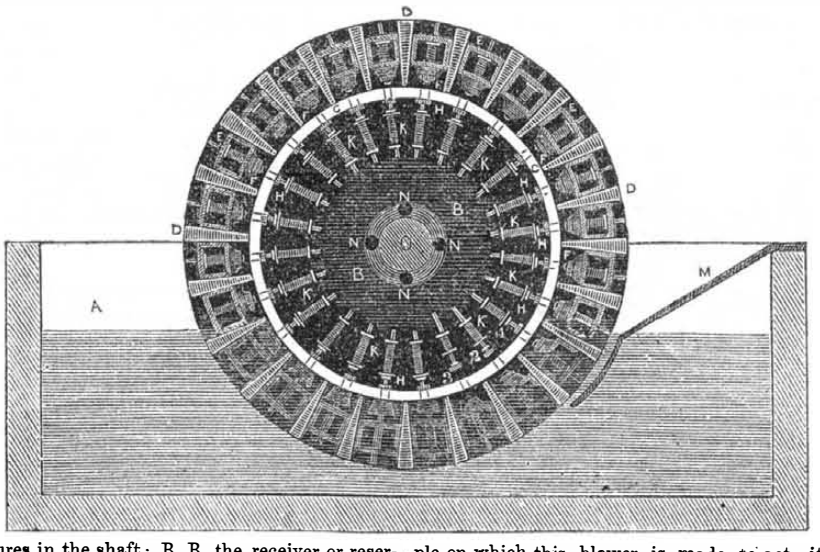


Fig. 3, is a sectional view of the shaft and of one of the heads of the drum—the arrows indicating the direction of the air through the shaft as it leaves the receiver.

Fig. 4, is a sectional view exhibiting the valves in which F, is the float of the exterior valves.

The width of the air cells and part of the valves are enlarged in the engravings so as to make them move obvious to the view.

To give a ready undersanding of the principle on which this blower is made to act, it may be said that the air cells on the periphery of the drum, are so many boxes with valves on the bottoms. As the wheel is turned these boxes are successively plunged in the water while in an inverted position, and the air with which they were filled when entering it, is forced through their valves into the drum of the wheel, by the pressure of the water from below; the strength of the blast being determined by the depth of immersion.

But, from a description of its operation more in detail, we may say that water is let into the flume or cistern, until about one-third of the diameter of the wheel is immersed.

[Continued on page 188.]

Useful Receipts.

Cure for Felon or Whitlow.

Take the yolk of one egg, an equal quantity of strained honey; one table spoonful of spirits of turpentine, fresh drawn, one tea spoonful of spirits of camphor, mix well and thickened with flour to the consistence of a thin paste, spread it upon the sore thinly and cold.

[The above is from the Ohio Cultivator. It may be a most excellent receipt. The felon is an excedingly painful thing. The plan to cure it practised by doctors is to put a lance into it.

Old Cure for Ague.

In the tenth volume of the Massachusetts Historical Collection is a recipe for the cure of Ague, sent by Sir K. Digby to John Winthrop, in 1654, it will amuse your readers. He says: "For all sorts agews (agues) I have of late tryed the following magnetical experiment with infallible success. Pare the patient's nayless when the fit is comming on; put the parings into a little bag of fine linen of sarsanet, and tye that about a live eel's necke, in a tubbe of water. The eele will dye, and the patent will recover."

Salt upon Ice.

The Royal College of Chemistry have declared the practice of removing ice from the sidewalks, by sprinkling salt thereon, highly detrimental to health. They say it brings the immediate temperature down to several degrees below zero, and that the mosture left by it is of such a description, that boots and shoes will retain it for several days.

Remedy for Deafness.

If glycerine is introduced into the ear by a small piece of cotton, it will in all likelihood cure any case of deafness, which is caused by the gum in the ear becoming hard; for it possesses the peculiar property of attracting moisture from the atmosphere.

Glass, which intercepts little, if any light, will stop two-thirds of the heat; dark red glass, which intercepts 999-1000ths of the light, stops little more than one half of the heat.—Light of fire or candle condensed by a lens produces a slight increase heat. Thick glass interceps more heat than thin," though it may transmit more light. Solar heat is transmitted through air without heating it and passes entirely through glass.

There are forty grains of salt in one thousand grains of water in the Gulf of Suez, and upwards of thirty-nine grains in all the specimens down to Bombay. The water of the Atlantic, off the Canaries, was found to contain forty-four grains in every thousand. Dr. Buist has constructed a simple apparatus for ascertaining the temperature of the ocean at all depths, which also may be used for bringing up water.

Snow flakes are one-third to one-thirtyfifth of an inch in diameter; their figures are diversified stars. The occasional red color of snow is ascribed to a fungus growing on the surface.

Mr. Gannett of Boston, reckons that each individual averages three hours' conversation daily at the rate of a hundred words a minute, or twenty pages of an octavo volume in an hour. At this rate we talk a volume of four hundred octavo pages in a week, and fifty-two volumes a year.

The editor of the New Haven Register has seen a sample of pure linen damask woven in that city, by Mr Matthew O'Connell, formerly of Dublin, and thinks it the first ever made in this country.

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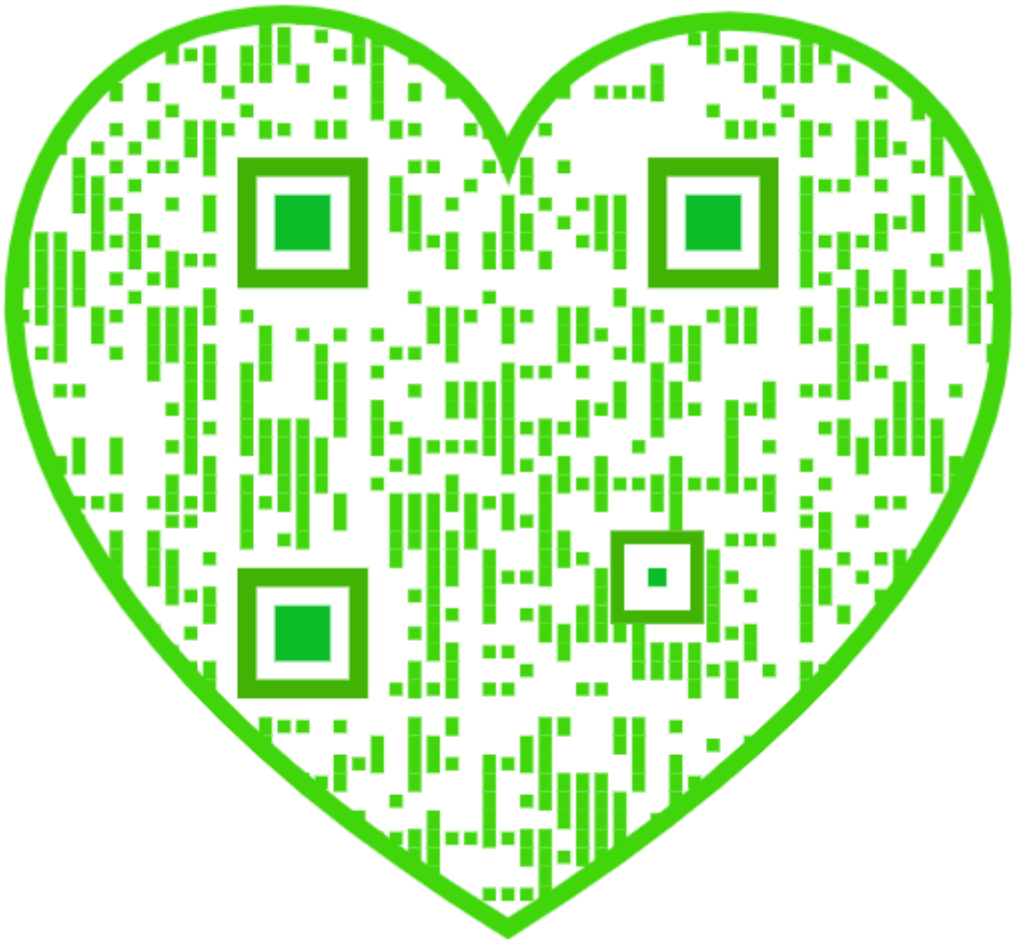

Miscellaneous.

Correspondence of the Scientific American.

WASHINGTON CITY, Feb. 26, 1850.

There have been no Lectures at the Smithsonian Institute during the past week; nor does there appear to be a prospect of any. The fact is, there is a good deal of dissatisfaction at the nature of the lectures recently delivered. Instead of scientific discourses, we have had regular Sermons on Divinity, from a learned Bishop and other Reverend gentlemen. Far be it from me to disparage such labors; but in an institution like this, the public expect to be enlightened on other subjects than those treated of in the pulpit. It is to be hoped that the Regents will cause the publication of the few really interesting lectures delivered some time ago; otherwise the object of the founder will have been but imperfectly carried out. He certainly could not have intended that the benefits from the labors of well paid lecturers, should be confined to those having the good fortune to squeeze themselves into a small lecture room.

Brown's hydro carbon gas is getting to be used quite extensively in this section. It can be manufactured on the premises of the consumer by the most simple process of rosin and water. Its density is such, that a thousand feet, which can be made for a dollar's worth of material, is equal to three thousand feet of coal gas.

Our fashionable ladies are in a state of great excitement on account of a wedding dress worn by a Miss Russell at St. Louis, and which is described as being composed of glass. They are desirous of knowing how such garments can be made. Can none of your scientific readers inform them?

According to a report from the Mint made last week, it appears that the real worth of the California $5 gold piece, is only $4.84.

Henry Boreaw, of Philadelphia, has added an improvement to the melallic pen, which will be found very serviceable. An air tight gum elastic tube is inserted in the handle, which by the use of springs is filled with ink, which can be retained or let into the pen at pleasure; thus making the instrument serve for pen and ink-holder also.

Capt. Wood, of Texas, has invented a steam Wagon, intended to transport cotton across the prairies, between Houston and Brazos. He estimates its capacity at 100 bales, and its speed at 20 miles an hour.

I learn that an application has been made for an Improvement on Melsen's Sugar discovery. You will recollect that by Melsen's invention, double the quantity of sugar is extracted from the beet and cane than by the former method. His plan consists in preventing fermentation by treating the juice with an acid, sulphate of lime.

Mr. Ewbank, after an absence of several weeks, has resumed his duties at the Patent Office.

From an official report it appears that at our Arsenal last year, there were manufactured nearly three million percussion caps for small arms, 4000 cartridge bags, and 725 signal rockets. Arrangements are now making for altering muskets to percussion, at the rate of 1500 per month. The machine for forming and charging percussion caps, works at the rate of 5000 per hour.

A memorial has been sent to the House, asking the aid of Congress for carrying out a plan for carrying the telegraph across the Atlantic, by means of a cable from Halifax to Ireland, along the Banks of Newfoundland, which, it is stated, extend to within 160 miles of the Irish Coast. The estimated cost is from three to four millions.

The Naval Committee have reported in favor of purchasing the patent right of Professor Espy's Ventilator. They say that the superiority and cheapness of the machinery employed to produce these result, enhance the merits of the invention.

Several memorials have come on from Western New York, asking a modification of the act authorizing a re-issue of the Woodworth Patent for Planing Machines. The petitioners say that the patent gives the exclusive right to combinations of machinery never invented by Woodworth, which, during his life, were never claimed by him, and which are not found in the original patent of 1828.

A Rival to Buffalo.

The completion of the Oneida river improvement (which has taken place) forms a new and important feature relative to the New York route of the trade of the West. Oswego is to be the great gainer by it and comfessedly it will place that point in the attitude of a formidable rival, in this particular, of Buffalo. The improvement of the Onida river, and the construction of the Oneida Canal affords a direct communication from the lake to the Oswego Canal. Two stearmers are in process of construction at Brewerton, one for towing up the river, and the other, which is of larger dimensions, to be used on the lake. These boats are to be ready by the spring of 1850, at which time the river will be in navigable order. The Oneida Lake Canal is six miles in length, and runs from Higginsville, on the Erie Canal, eleven miles west from Rome, to the Oneida Lake. It has seven lift locks and one guard lock, of wood. The Oneida river is 20 miles in length, and has two lift locks with chambers 30½ by 120 feet. By availing themselves of this river and canal the Oswego forwarders save 179 miles toll, which is equivalent to 17c and 3 mills on a barrel of flour, compared with Buffalo, and a saving of 3c and and 3 mills on a barrel of flour compared with their old route, to say nothing of shortening the distance and lessening the expense of towing and the time in reaching tidewater. A glance at the map of the State will show the route to be from Oswego to Three River Point, thence up the Oneida River and through the Oneida Lake and Canal, striking the Erie Canal at Verona Centre, or Higginsville, as it is termed by the Canal Commissioners.

New Grist Mill at Niagara Falls.

Messrs. Olmstead, De Veaux and Tracy have erected a flouring mill, the present season on the Niagara river, at the Eastern termination of the suspension bridge. Two run of stone are now in opetation. The mill is placed upon the bank of the river, at a perpendicular elevation of two hundred and fifty feet above the water which propels it. The river at this point commences a rapid descent, and by constructing a race but a few rods in length, a fall of some rods is obtained. The water wheel is placed at the lower end of this race, and the mighty Niagara constitutes the mill pond. A cast iron shaft, two hundred and seventy feet in length—running up at an angle of forty-five degrees—connects the water wheel with the machinery it propels. The building is of stone, thirty-six by forty-six feet, three stories high, and built in the most substantial manner.

The design of the mill, and the arrangement of the machinery are the work of Mr. Tracy.

The bolts have been made double the ordinary length, and the proprietors warrant forty-two pounds of flour to sixty pounds of wheat, after deducting toll.

Effects of Camphor on the Teeth.

From attentive observations of the teeth for several years, it has been ascertained that the use of dentifrices, containing camphor, renders them brittle. Teeth allowed to remain in chalk impregnated with the champhor, for a few days had the enamel very much altered; placed in camphorated spirit they become very brittle; and, if exposed to the fumes of camphor, a morbid condition to a still greater extent supervened. A writer in the London Lancet states, that seven tenths of the dentifrices now used contain more or less of this destroying agent

Hudson River Railroad.

Since the completion of this road to Poughkeepsie, the passenger receipts are said to be much greater per mile than were the corresponding receipts on any other railway ever opened in the United States.

North River Railroad.

Since the laying down of the switch and turnout on the Hudson River Railroad, near Clinton Market, the buisness thereof has increased fully fifty per cent, and it is now a paying market.

Mirage on the Prairie.

It appears that the optical illusion so common on some seas and in the wide sand deserts of Africa, known as the mirage, is sometimes seen on the Western Prairies. The editor of the Chicago Trbune describes the appearance thus:—"One day last week we took the morning train for St. Charles. In order to enjoy the bracing air and the scenery, we chose to stand upon the platform in front of the passenger-car. As the sun came up from the Lake, we observed that objects to the west of us became suddenly elongated vertically. Stacks of hay lifted themselves to an amazing altitude. The story-and-a-half houses on the prairie towered up with all the pretension of five-story palaces. As we approached these objects, they gradually contracted laterally, both from above and below, towards the centre, until they presented the appearance of two cones, the upper cone commenced slowly vanishing from the apex upwards, and at the same time rapidly receded towards the horizon, while the lower one—the real object—gradually contracted to its natural proportions. In a little while the upper cone had become reduced to the faintest possible line upon the eastern horizon, and as it disappeared entirely, the house once more resumed its usual appearance. We were informed by Mr. Allen, the conductor, that he had often witnessed the same thing while crossing the prairie in the morning."

Something New.

Under this head a Connecticut genius advertises a patent "Bed-clasp, for the purpose of preventing children or adults while in bed from unintentionally uncovering themselves." As a distinguished statesman observed, touching a different sort of "annexation," we shall "be glad to see it." "Kicking the kiver off," says the Boston Post, has long been a crying evil in the best regulated families.

James Lennox, Esq., of this city the gentleman who purchased the original manuscript of Washington's Farewell Address, is said to possess a fourtune which yields $120,000 per annum. He is a man of the most princely liberality and benevolence, and his charitable contributions amount to $60,000 per annum—one half of his income. He possesses the finest library of any gentlemen in this city, and has more rare old works in it than any other library, public or private.

A train of 49 wheel cars passed over the New York and Erie Railroad, one day last week. It was a third of a mile in length, and probably the largest train ever drawn over a merchandise road. There were, among other articles, 200 fat cattle, 500 sheep and any number of live and dead hogs, with flour, whiskey, &c.

Potatoes.

Potatoes are now selling in this city at one cent a piece. This is great for the speculators but not for the poor. The only remedy is Grocery Associations. The farmers don't get the benefit of high prices—not them, for they only get about 37½ cents per bushel.

The New-Orleans Delta records the fact that for many years a settlement of gipsies has existed at Bolixi, and along the southern coast of the Mississippi. They have subsisted by catching fish and oysters, and maintain, in all respect, their habits of idleness and quietude.

Mr. Dickerson will soon bring into the U. S Senate a bill to abolish copper cents, and to substitute a coin of the size of a half dime to be composed of silver and copper. The alloy is in prepraation at the mint.

Glad to hear of it.

The new Pasha of Egypt has ordered a set of elegant equipages to be built for him in the United States, to be ready during the coming spring

A Jewel of a Wife.

A wife who, whatever may be the journey, copies the sagacious elephant, and travels with a single trunk.

Notice

Whenever any of our friends order numbers they have missed—we shall always send them, if we have them on hand. We make this statement to save much time and trouble, to which we are subjected in replying, when the numbers called for cannot be supplied.

Apples.

The best quality of apples are selling at eight dollars a barrel, and inferior at $3,50 to $4.—This is almost equal to California. The fact is, that apples, and almost all other discriptions of fruit, except peaches, were a failure last year, and high prices were the necessary result. Vergaloo pears sold last fall at $21 a barrel. We never heard of such prices before, in the market.

The great law suit at New Orleans regarding the claims of Mrs. Gaines to the estate of Daniel Clark, has been decided against her.

A party of engineers are surveying the route between Michigan City and Chicago.

A. McNair Cunningham, Esq., of Beaufort, S. C., is authorized to receive subscriptions for the Scientific American.

Back Volumes Scientific American.

We have remaining a few more copies, Volume 4, bound, for $2,75; but of previous Volumeso, no *complete*, sets either bound or in sheets. Of Vols. 3 and 4 we can furnish sets of about 40 numbers each (not consecutive,) for one dollar per set; of Vols. 2 and 3, sets of about 50 Nos. (containing both Vols.) at the same price (one dollar). We have parcels done up ready for mailing of all the different Vols. referred to above, and on receipt of $1, either of the sets ordered will be immedially forwarded by mail.

LITERARY NOTICES.

Messrs. Phillips, Sampson & Co., Boston, are engaged in the publication of Gibbon's History of the decline and Fall of the Roman Empire, with Notes by Rev. H. H. Milman. The work will be comprised in six volumes, after the style of the Boston editions of Hume and Macaulay's England, and will be sold at the same price. The first number is now nearly ready. We are glad to notice that this enterprizing house have undertaken this work, as through this medium thousands will gain a thorough knowledge of one of the most eventful periods in the world's history, and at a small consideration.

We are indebted to the above house for No. 10 of their superb edition of Shakspear's Dramatic Works. It contains that most popular comedy, "The Merchant of Venice," prefaced by a magnificent portrait of Portia. This play contains some of the best features portrayed by the author, a few of which are familiar to every one. The tribute to mercy is one of the finest effusions man's imagination ever conceived, and its applicability to the circumstance under which it is given displays a wonderful ingenuity.—With our present means, no one is excusable for not possessing a thorough knowledge of Shakspeare's writings, and to those who have not studied them, we can say that no idea can be formed of the vast store of knowledge which they contain. If it be true that "the greatest study of mankind is man," we can say with truth that here we have all his different phases beautifully given. This fine edition is sold by the booksellers generally, at 25 cents per number, can be had of Dewitt & Davenport of this city.

An Abridged Edition of Minifie's Drawing Book has been made by the author for the purpose of meeting the views of school teachers, who are desirous of introducing it into schools, at a reduced cost. The price for which it is sold ($1,25) will doubtless induce its extensive adoption, which we trust may be the case. We have a quantity of this edition on hand: any person wishing a copy has only to enclose the amount in a letter addressed to this office.

Fitzgerald's ITEM is one of the most interesting weeklies extant—always full of piquant matter.—We can assure our lady friends, especially the unmarried, that Fitz keeps a sharp look out for their future well-being: this being the fact, we call upon them to assist in extending the usefulness of this really good paper. Published in Philadelphia at $2 per annum.

PETERSON'S LADIES' NATIONAL MAGAZINE, for March, contains six full page engravings, and the usual quantity of interesting matter. For sale by Dewitt & Davenport, N. Y.

SARTAIN'S MAGAZINE OF LITERATURE AND ART, March Number, Dewitt & Davenport agents for this city. The embellishments are 26 in number, several of which are very superb. "Christ Blessing Little Children," by Sartain, is one of the richest mezzotints we have ever seen. The tinted engraving of the "Hungarian Detachment," is also very beautiful. The contributions are 23 in number, from our best authors.

A MEDICAL APOCALYPSE—being Revelations and Expositions of the N. Y. Academy of Medicine.—This very amusing satire upon the Academy is published by Dewitt & Davenport. The author manifests considerable ingenuity, and will no doubt be read extensively. We do not think the work amounts to much; perhaps others may who are posted up on the doings of the Academy. Price 25 cts.

DICTIONARY OF MECHANICS, ENGINE WORK AND ENGINEERING.—Nos. 3 and 4 of this work have been received from the Messrs. Appleton.

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The New City, at Hadley Falls, Mass.

One of the largest undertakings which New England enterprise and New England capital ever resolutely set to work to accomplish, is now fairly afloat on "the tide of successful experiment," on the left Bank of the Connecticut River, about midway between Springfield and Northampton, Mass. At that point said River cuts a beautiful semi-circle, and falls within a short distance no less than fifty-nine feet. The immense water-power afforded by this fall is more than thrice that so generously improved at Lowell, on the Merrimack, and transcending any other available water-power in New England, has been slightly improved for a number of years by a paper mill or two on the right bank of the stream (South Hadley Falls Village,) and a small cotton mill on the opposite shore.

The sagacity of several leading Boston capitalists, whose enlightened enterprise had, in other parts of the Commonwealth, reared out of the still forest and the quiet bubbling water fall, humming factories, and stirring, thriving villages, several years since, pointed this out to them, as the future seat of the greatest manufacturing City of the New World.

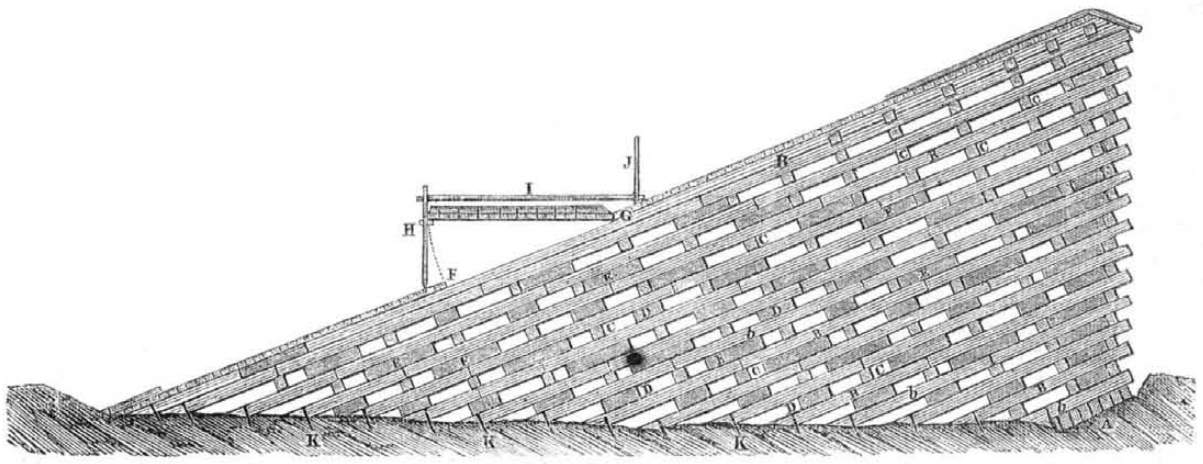
Prominent among these men was the late Edmund Dwight, who lived only to see the great undertaking fairly started on its giant pathway. In 1847, the plans of these gentlemen were perfected, the right to the water-power on both sides of the river secured, and possession of some 1200, acres of land on the left bank obtained. The same winter they obtained a Charter of the Massachusetts Legislature, under the name of the Hadley Falls Company, and with a capital of four millions of dollars, practical operations were immediately commenced. The first great work—the most startling in its nature, and the most difficult of accomplishment—was the construction of a dam across the entire width of the Connecticut River which at this point is over one thousand feet from shore to shore, with a rapid current and a heavy volume of water. The first effort—that of the summer of 1848—was unsuccessful. The structure was completed in November, and seemed massive and firm enough to stand the shock of the father of New England waters, for a century. But it failed, nature asserted her sway, and swept away, in five minutes, the labor of a summer. This was a sad reverse, but the minds that could conceive, right soberly set about to execute a project so vast and laborious, were not of the stamp to be discouraged by even so serious a misfortune.

The plan of the structure, which is in its simple characteristic the same as that of many existing smaller dams in the country, was suggested and strongly recommended by the general superintending agent of the corporation—John Chase, Esq., of Chicopee, who has enjoyed a wide experience, and won an enviable reputation in conducting the operations of manufacturing and water power companies. The winter of 1848–9 was improved by Mr. Chase and Mr. Philander Anderson, an Engineer of well-known ability and large experience, who was at the head of the engineer corps in the employ of the company, in improving and perfecting the plan; and the many and formidable difficulties which had to be overcome, render it a proud monument to the persevering labor and scientific skill which they bestowed upon it. On the completion of the plans, Mr. Anderson took the position of Engineer, and by his energy and skill, and the valuable assistance of Mr. A. C. McNary, as superintending mechanic—carried through and perfected, in one short summer, a work which seemed in the outset beyond the power of man to accomplish.

The engraving accompanying this article represents a transverse section of the dam. The sloping line shows the up river slope of the structure. The perpendicular line on the right, where the timbers seem to project, is the under side. The surface of the engraving presents an interior view of the structure, such as would be seen were the dam parted perpendicular from front to rear. We proceed to a particular account of its construction, which will serve, with the engraving, to convey a clear idea of its character to every reader.

Two coffer dams, one each side of the river, and each extending 200 feet from the bank into the stream, were commenced in April and completed in May. The water pumped out, and the rock which forms the bed of the stream at this point, excavated to the depth of six feet. The construction of the main dam was then begun laying down three fifteen inch square sticks lengthwise across the river, with their upper surface in plane inclined to an angle of 21 degrees; the rock below was cut to the same angle to give them a proper bearing; and then the sticks bolted to the rock with one and one quarter inch iron bolts. The ends of these sticks are visible in the engarving at A.

This engraving is an elevation of the sections of the dam, which are placed six feet from centre to centre, and as the river is 1,017 feet wide, there are 170 of them.—



width to the middle of the stream. The structure was continued and completed in the manner we have described through the extended coffer dams. Then there remained only the central portion of 217 feet to be finished. Here, to dispose of the water, it became necessary to remove the coffer dams, previously constructed, and let the water on the portions of the main dam already completed. A strong coffer dam was then thrown across the gap four feet higher than the first ones, raising the water and turning it through the openings in the main dam, left at F to G. This feat successfully accomplished, and the water pumped out of the coffer dam, the last piece of the structure was pressed forward rapidly to completion. The coffer dam in the centre was then removed, and the dam stood complete, save the opening in the planking at F G, through which the water was running the whole breadth of the river, to a depth at that time of about two feet, having been raised from its natural bed about six feet. Nothing remained now but to close this opening. This was done by building gates or doors of the width of the opening (16 feet) and 18 feet long each. These gates were put together on the slope of the dam, above the opening, and hung by 5 strong hinges attached each to the planking already spiked down at the point G. When finished, these gates were raised by derricks, and lowered partly over the opening, but left resting on the notch in the post at the point H. To this point was attached the horizontal bar seen over the gate at I, forming a connection with the lever standing vertically at J. The power applied at the top end of the lever easily removed the post from under the gate, and left the latter to fall by the dotted line into its place.

The opening at the ends of the dam was closed before the removal of the coffer dam, and also at short places near the middle of the stream,—leaving to be closed by gates, 828 feet, which took 46 gates, each 18 feet long.—All things being made ready, at 22 minutes before 1 o'clock, Oct. 22, 1849, the Engineer gave the signal, and every other gate dropped into its home. Immediately followed another signal, at which the remaining gates fell to their places,—and the dam was closed. The "mighty waters" rolled back in their stream, and bowed in submission to the science, skill and labor of man.

Thousands were upon the spot to witness the closing scene of this great work, and the filling of the dam was watched with eager curiosity. It filled rapidly at first, but more slowly as the water approached the top, and at six minutes before 10 o'clock that night, or 9 hours and 16 minutes from the closing of the gates, the sheet poured over the crest, amid the acclamations of the assembled multitude.—The scene at this time,—the darkness of the heavens lighted up by bonfires on either bank, and in the rocky bed of the river below the dam, with the waving of many lanterns,—was surpassingly fine. The water pours over the dam in a magnificently perfect sheet. The depth of water on the crest varies as the river is high or low. At one time since the completion of the work, it was six feet deep.

The height of the dam from the bed of the river varies, as the bed varies, from 28 to 32 feet. The amount of timber used in its construction is about three and a half millions of feet. The abutments are of heavy masonry, the amount in both being nearly 13,000 perches. A rough calculation of the amount of lateral pressure which the dam sustains, gives nearly twenty-nine million pounds, while the vertical pressure is about three times that amount.

During most of the summer, from four to five hundred laborers of various kinds were employed upon this structure.

The dam leaks but very little,—not a whit more than it is desirable for its preservation. The total cost of the structure is set down at $150,000. There is not a dam like it in the United States,—no, nor in the world.

While this great work was perfecting on the water, the operations of the Company on land, were scarcely less majestic. Hills were removed, vallies filled up, and the whole face of the earth changed from its broken, into an even, finely sloping half or three quarters of a mile, where it subsided into an open level. Then it was laid out in streets and squares, with appropriate regularity. Two Canals, 400 feet apart, half a mile long, (and liable to be extended several miles,) 140 feet wide, and 15 to 20 feet deep, were then constructed, parallel with each other and at right angles to the river. The surface of the water in the first canal is 20 feet above the level of the water in the second one—and the water in the second one being still higher than the level of the river, an opportunity is thus afforded of using the water twice, when mills have multiplied and crowd the banks of each. The canal walls are nine feet thick at the bottom, and are magnificient specimens of masonry. An immense machine shop, a blacksmith's shop, a fine office building, a square of brick tenements, and four blocks of boarding houses, have also been erected by the company. One large cotton mill, 268 feet by 63, six stories high, capable of carrying 18,000 spindles, and supporting alone a population of one thousand persons, is already completed, and will be set in operation in the spring. A second, precisely similar, is under way.

In the execution of what has already been done, there have been excavated by the Company 602,000 yards of earth and 40,000 yards of rock. The whole amount of masonry work is 70,500 perches.

All these are the work of the Hadley Falls Company, but they do not purpose to go largely into the business of manufacturing. Their investiments in land, the dam and improvements already absorb a large portion of their capital. Having furnished an almost inexhaustible water power, and surrounded it with every facility and attraction, they now invite individual and associated capitalists, to come, purchase and improve it in any or all the ways to which such power may be put. Such has already been the case to some extent, and as better times dawn upon the buisness of manufacturing it cannot be doubted that the growth of this embryo city will be rapid almost beyond precedent. The extent of the resources which the place presents seems almost boundless. A rough and probably low estimate of the available power makes it equal to carrying 1,200,000 spindles and giving support to a population of one hundred thousands persons.

Already, the village has a population of several thousand souls. Individual enterprise has erected a large number of fine store blocks. Boody & Ross, the contractors for all the masonry work of the Company, have nearly completed one of the finest hotels in the Union.—The main part is 160 feet by 57, and there is a wing 96 by 40 feet. The number of traders in the place is not far from forty, and the signs of progress are visible on every hand.—While the material wants of the population are thus liberally provided for, their moral and religious instruction is not left uncared for. With that enlightened liberality which has distinguished Massachusetts capitalists engaged in similar enterprises, the Company have erected a fine large School House in a beautiful location, and have set apart a number of lots for Churches, which will be improved as soon as the several religious Societies already organized gain sufficient numbers and strength to warrant the erection of Church edifices. On the high land at the upper extremity of the village, a great reservoir has been made which is to be filled with water from the river and thence distributed throughout the place. A beautiful supply of pure water is thus secured for all purposes. Everything is conducted on the same generous scale, and many generations yet to come will have abundant cause to bless the enlightened founders of this great work.

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New Inventions.

A Sure Alarm Clock Invention.

ST. JOHNSBURY Vt., Feb. 4th, 1840.

MESSRS. EDITORS—Noticing your interest in all contrivances to promote "early rising," I am induced to send you an account of a little machine that has been for some time in successful operation in my sleeping room. Finding that I was not moved by the rattling of a common alarm clock, I attached a little piece of apparatus, by which, when the alarm is wound up, the clock is prevented from striking; but when the alarm weight is released a motion is communicated by a string, which in another part of the room lights a lamp, and the fire, if I desire it, and directs at the same time a small stream of water upon the pillow, or throws a weight upon the bed.

The chief advantages that I gain are, that I cannot avoid the falling weight, or stop the stream of water without leaving the bed, and so are not tempted by the luxury of dozing, and that I have a light room and warm fire (when I wish) to make the shower bath more pleasant.

Instead of eighteen months, as taken by the Manchester or London mechanic, my "attachment did not cost a day's labor, and so simple means work so well I wonder others have not tried and used them before.

I have taken the liberty to trouble you with this as you remark that it is a remarkable coincident that there should be two similar inventions by men who had no communication with each other. Mine was in operation long before I supposed any one else had been thinking on a similar subject.

HENRY FAIRBANKS.

New Hemp Brake.

The Louisville Journal says that Mr. Colver, of Missouri, has invented a Hemp-brake, which has been exhibiting in that city, which, with four men and two boys, as stated by the proprietors of it, will break 2,240 lbs. in a day.

The machine is precisely on the principle of the hand-brake, the swords moving with great rapidity. On each machine there were two places for breaking and two for cleaning the hemp, the ends of the swords serving admirably for the latter purposes. The machine is as simple as the hand-brake and as easily kept in repair. and it can readily be moved about in the field.

The loss by tow, &c., is only about from 12 to 20 per cent.

Lithographic Printing by Steam.

The Phfladelphia Ledger says,—We have received from Messrs. Wagner & McGuigan, Lithographers, a copy of a print of the Lord's Supper, which has been executed by the first lithographic steam power printing machine ever successfully invented. All the operations of printing are performed by the machine, a feed-boy only being required. It will accomplish more work in one day than a dozen hand-presses would, and do it well, as the print before us is a proof

[We consider this to be a very valuable invention—something that has been long wanted to render more *valuable*, the valuable art of lithographic printing.

Air Guns.

We notice an error in the article on "Air Guns," in the excellent new Dictionary of Mechanics, published by the Messrs. Appleton. It is stated that 10 atmospheres, or 150 lbs. pressure, will produce an effect nearly equal to gunpowder. A friend of ours once spent several thousands in getting up a steam gun, taking it for a positive fact, that because Mr. Perkins stated that steam, at 600 lbs. pressure, would project a ball with a force equal to gunpowder. He found to his surprise and loss that 1000 lbs. pressure could not produce an effect equal to gunpowder. We make these remarks to prevent any person from spending money on vain projects.

The date of the Patent of Wood's Shingle Machine, in our last number, should be 1850 instead of 1848.

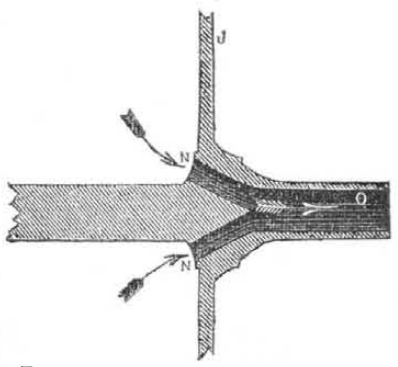
The Hydrostatic Blowing Pipe.

(Continued from the First Page.)

Where water power is abundant, paddles or buckets may be placed on the wheel and a current of about four miles an hour given to the water in the flume which will turn the wheel and produce the blast. But, where economy of power is desired, the blowing wheel may be suspended in a cistern or circular trough, and turned by steam or any other power.

The air cells enter the water in contact with the apron M, which is intended to exclude the water until the whole mouth of the air cell is immersed, and thus prevent a loss of the air.

FIG. 3.



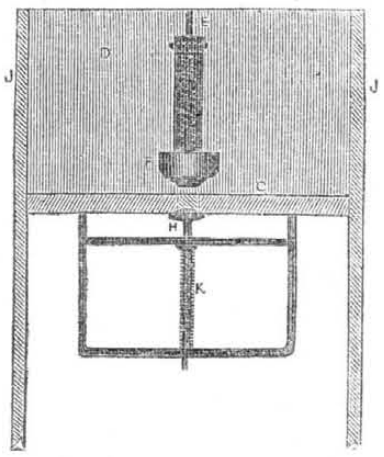
The spiral springs on the valve stems are composed of brass wire, which will resist the oxygen of the water for many years. These springs gently hold the exterior valves open while the air is passing into the receiver. But as the air leaves the cells, the ascending water surrounds and embraces the floats F, which overcome the spring and press the valves to their seats, thus preventing the entrance of water into the receiver. The wind in the receiver enters the hollow shaft through the appertures N, N, N, N, and is discharged into a chest at the end of the shaft by means of a stuffing box—from this chest it is conveyed wherever it is desired for use.

As the cells retain their air until nearly under the shaft, they serve to relieve its bearing on its journals, so that the whole operation is almost free from friction.

In making the air cells very little strength of material is required, as they are subject to hardly a perceptible strain, the pressure of water upon their outsides being just equal to that of the air within.

The pressure of water is about 7 ounces to the square inch for every foot in depth of immersion. The diameter of the wheel and depth of cistern must, therefore, correspond with the strength of blast required. The immersion of the cells of from 12 to 20 inches will generally be found sufficient for the cupalo, while an immersion of about 3 feet will be required for the forge, and still deeper if the wheel be remote from the fires. For the high or blast furnace an immersion of about 5 feet will generally be found necessary.

FIG. 4.



The advantages claimed for this blowing wheel, over the cylinder or piston blowers, are the following :—

1st—That it may be built at less than one half of the expense of piston blowers of the same capacity.

2nd—That having no cranks' connecting rods, cross-heads, ways, piston heads or piston rods; in short, no movements but the valves, it is but little liable to disarrangement, and can require only trivial repairs at long intervals.

3rd—That being nearly frictionless, it may be driven with about one half of the propelling power which is required for cylinder blowers—while in competition with the fan blower it will need less than one-fourth of the power consumed by that instrument.

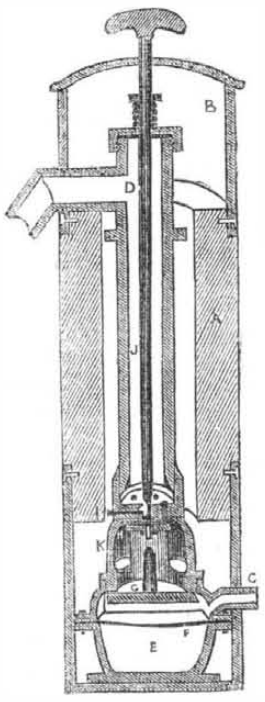
4th—That coal dust and other impurities of the atmosphere have no effect whatever upon its action.

5th—That it requires no oil or grease.

Measures have been taken to secure this invention by patent, and any other information desired, about it, may be obtained by letter (*p.p.*) addressed to Mr. Cook at Saratoga, N.Y.

Improved Hydrant.

This hydrant is the invention of Messrs. William Tabele and Wm. Gee, No. 47 Eldridge street, this city, who have taken measures to secure a patent for the same. It is a self-closing hydrant, and provides a way to graduate the re-active force of the inlet water when the main valve is suddenly closed, so as to allow this otherwise desirable method of closing hydrants to come safely into use. An air-chamber is employed, and it is covered with an air-tight elastic diaphram, and placed in such a position that the water, when shut off will act upon the elastic diaphram, to compress the air, and thus graduate the re-active force of the shut off water. The orifice for the discharge of the back-water, is placed in such a situation that it can be plugged up in warm weather, when not required. There are some other excellent points about it.



This engraving is a vertical section; A is the hydrant casing; B is the lid; C is the inlet water passage; D is the outlet. The water passes up through the centre of the case in the valve rod tube. E is an air-chamber, and F is an air-tight elastic diaphram which covers it; G is a round valve tapering upwards to set snug in the conical seat. It has a guard underneath it (a flange round the chamber,) to keep from pressing on the diaphram. This valve closes the inlet water passage to the cylinder, K. H is the main valve. Both valves are represented in their seats, and the water passages closed. J is the main valve rod. The valve G has a short upright stem, and when the valve rod is pushed down the nut on the lower side of the valve, H, pushes down the stem of the lower valve, G, and the water passes up and out at the spout. By removing the pressure from the cap of the valve rod, the spring on the top of the tubes around the rod, draws the valve H into its seat, thus suddenly shutting off the flow of water. The water from the tube, C, then flows under the lower valve, pushes it into its conical seat, and then the elastic nature of the air in the chamber comes into operation to graduate the re-active force of the water. The seat of the valve H, is a partition in the cylinder, K. The rod, J passes through a central opening in it, and there are a number of openings through it, (one shown) to allow the water to pass freely up, when the valve is pushed down from its seat; I is a transverse opening running through this partition, to allow the back water in the tube to drain off, to prevent it from freezing—a small groove is cut on one side of the valve rod, to let the water get into the said orifice. As this opening is above the seat of the main valve, it can be taken up in warm weather and plugged, and thereby save a flow of water underneath—a thing much desired when practicable. The cylinder, K, is screwed to a fixed lower part, and can be unscrewed from the top, for repairs, &c., and while this is performing no water will flow out at all, as the valve G completely stops up the inlet passage. This is a very important feature in the hydrant, and a good one.

All the parts are easily repaired, and it certainly embraces utility and convenience in all its features.

To Correspondents.

We are often in the receipt of letters from those who are not subcribers to the Sci. Am., soliciting information relating to such matters as we have no interest in, prefaced generally with the very soothing remark, that they "have been informed that we are very kind to people residing in the country, and those desiring information have only to ask it by pre-paying the letters." For the benefit of all those interested in this matter, we beg to state, that notwithstanding we are friends to all mankind, we do not wish to become subjects of reference for those who do not feel the liberality either to pay us for the trouble or become subscribers to the Scientific American. We make exceptions in all such cases, to those who write to employ us as Patent Agents. It requires the constant attention of two persons to attend to the correspondence of this office; and it will be readily seen that we cannot give this time, in justice to ourselves, to any but subscribers, and applicants for assistance in securing Letters Patent. We must make this a fixed rule hereafter, unless we are paid for the trouble. All subscribers will be treated with as much attention as usual.

New Plan of Laying the Foundation of Piers and Docks.

Mr. Amasa Stone, of Springfield, Mass., has invented a novel and excellent method of laying the foundation of piers, &c., by building them above water, and sinking them truly and gradually, each tier of stone upon a suspended platform. He employs a floating frame, constructed to operate almost like the section floating dock; the stone is laid properly in tiers on a suspended platform, and sunk truly, one tier on the top of the other. This is a far better plan than sinking caisons. Measures have been taken to secure a patent.

The Great Discovery of Sir H. Davy.

When the friends of Sir Humphrey Davy were expressing their high admiration of his valuable discoveries, he interrupted them with this extraordinary remark: "The greatest discovery that I have ever made, was the discovery of Mike Farraday"—a poor boy whom he picked up in a work-shop, and whose after-life did credit to the philosopher's assertion, for he is now the world renowned Sir M. Farraday.

Monuments from Nicaragua.

Mr. Squier, U. S. Charge to the States of Central America, has sent to the Smithsonian Institution, from the Island of Zapatena, in the Lake of Nicaragua, two statues, carved in black basalt; one of which represents a tiger springing on the back of a sitting figure.

A bill has been introduced into Congress by Mr. Schenck: It reduces the legal value of a Spanish shilling to that of a dime, and the 6-14 cent peices to five cents and foreign quarters to twenty cents. The mint is required to coin double dimes or 20 cent pieces equal to the fifth of a dollar."

Seven American Merchants were lately induced by an offer of high pay, to stop at Charges and put up a building. Before the building was completed, six of the number were dead. The seventh took passage home in the Empire City, and breathed his last the moment she dropped her anchor in New York harbor.

We have some very interesting communications on hand, which have been unavoidably delayed but will appear in due order.

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Scientific American

NEW YORK, MARCH 2, 1850.

Woodworth Patent Controversial.

A resolution has been adopted by the Senate and Assembly of New. York instructing the Representatives from N. Y., in Congress, to inquire whether injustice was done to the rights and interests of the people of this State, by an act passed to extend a patent to William Woodworth for his Planing Machine, and whether the passage of said act was procured through misunderstanding or misrepresentation and whether it is not hostile to the spirit and object of the Patent Laws, and if they shall be of this opinion, they are requested to use their best efforts to procure its repeal.

Mr. L. Ward Smith, of Rochester, introduced the resolution into the Assembly; it met with considerable opposition at first, but finally passed by a vote of 77 to 6.

In the U. S. Circuit Court for the Eastern District of Louisiana, an injunction has been recently granted against Messrs. Vaught & McLin, on the petition of Elisha Bloomer to restrain them from infringing his rights in the Woodworth machine for that district. No patent in this country has caused so much litigation and hard feelings, as the Woodworth Patent. We advocate the strongest protection to inventors and defend their just rights at all hazards. In every controversial case, the difficulty is to arrive at the truth. It is our duty and the duty of every man, to search for it with honest motives, and unremitting diligence. So far as it regards alledged fraud in the case of this patent, we cannot say a word. We believe, however, that the State of New York, has adopted the right course in respect to the matter, that is to make a scrutinizing investigation of the subject at Washington. The only difficulty in the way of this may be a want of sending for important witnesses on both sides by the Committee appointed by Congress. We sometimes tremble for our whole Patent system, when we hear of public indignation manifested against speculating Patent Proprietors in every State, acting tyranically. It is well known that at one time, every State had her own Patent Laws, and a two-third vote of all the States can, at any time alter our present Constitution and abolish the Patent Office as a National Institution. Some of the States have threatened this already, so Congress should be careful in all acts to "do justly and love equity."

We have no feeling whatever with those who would plunder the inventor of his just rights, because he is poor and cannot pursue those who infringe his rights. We want to see the infringers of patent rights, punished to the fullest extent of law. But while we have such feelings, we also dislike the grasping lovers of filthy lucre, who make inventors their tools to oppress community with special monopolies in the strictest sense of the word.

An application is now before Congress for a farther extension of the Woodworth Patent, and the committee to whom it was referred, are divided in their opinions about it, the majority being in favor, but the minority strongly opposed to it. If the Bill passes, it will have secured the existance of this patent, for nearly 50 years, from 1828, the date of the first patent. Whether the bill will pass or not, we cannot tell, but from information of a peculiar kind in our possession, we think it will not, but the principal thing to be done is a rigid examination of just claims, and a wise and politic decision upon them. Owing to the blameable interference of Congress, in granting special priviledges to some and refusing others—making Congress a kind of Star Chamber, we sincerely desire a reform in the Patent Laws, so that a Patent shall exist 21 years, and no more on any account; and at the same time, we want some better plan to enforce the rights of patentees, while the patent does exist.

A bill has passed the House of Delegates fixing ten hours a day as the period of labor in factories within the State of Maryland. It is before the Senate.

Camphene.

Whatever others may think or say, we are strongly opposed to the using of turpentine, camphene, or any of the so called "spirit gases," either for illuminating or general domestic purposes. There is not a single week passes over our heads, which does not bring us the news of some heartrending accident, caused by its use. Almost without exception, females and children are the sufferers. Two weeks ago, a young woman in Philadelphia, whie acting as bridesmaid at a wedding, was burned in a shocking manner by the explosion or a camphene lamp; and last week a daughter of Mr. Rufus S. King, of this city, a very interesting young lady, 16 years of age, was burned in the arms and chest in the most excrutiating manner. This accident occurred from the cleaning of a pair of kid gloves by camphene, and then approaching too close to the fire, by which the camphene was ignited, hence the accident. We used camphene for illumination during one winter—and one only—then pitched it like physic to the dogs. We were most forcibly impressed with the danger of using it, by seeing a lamp tumbled over by a child, and had we not been present, we have no doubt but three children would have lost their lives. The only remedy for an accident of this kind is to smother the flame in a moment by a blanket, quilt, or something of that kind.

Neither tallow candles, nor oil, will burn, until the tallow, or the oil, is reduced to a gas by heat. This is the reason why a wick is needed, because oil and tallow are any thing but volatile. Camphene, on the other hand, is very volatile—that is, it evaporates into gas at a very low temperature. This is the reason why so many people are burned by their clothes taking fire, even while they are some distance from it, owing to their clothes in some way being impregnated with the fluid. Camphene will also suddenly explode (if ignited) like powder, if mixed with seven parts of atmospheric air, hence the danger of lamps, that are not perfectly tight.

We would fondly indulge in the hope, that the time is not far distant, when every private house, as well as the public ones, in our cities, will be illuminated with good, safe gas, publicly manufactured at a cheaper rate than either, oil, candles, camphene, phosgene, oxygen, or all the phenes (fiends) of spirit gas whatever.

Deception of Vision in Heights and Distances.

The evidences of our senses are frequently found to be very fallacious. Man obtains knowledge by experience, and experience only, whether derived from his own observations, or those of others. For example the sun appears to be a much larger orb when we first view him gazing over the eastern horizon, than when we behold him nearly vertical at noon day.

Correct and unmistakable observation however, proves the distance of the sun from us, when rising and at meridian, to be the same. It is very difficult to estimate the heights of mountains by the naked eye. It is true that some men have wonderful faculties for surveying, in comparison with others. Napoleon possessed an astonishing eye for calculating distances and elevations; but this quality is a rare one. Nothing can be more unsafe than the opinions of travellers, unaccustomed to the use of instruments, in reference to heights and distances; and all engineers who have been employed on extensive surveys know how to estimate them at their true value.

The state of the atmosphere exerts a great influence to decieve the eye in forming an opinion of height and distance. The best judgment cannot be trusted in the majority of cases. When the atmosphere is moist, we perceive distant objects through a natural telescope. The fire which at midnight sends its lurid glare high up in the heavens, when rain fall fast, deceives many with its proximity to their dwellings, while it may be some miles distant, People living on the sea board are very incapable of judging of heights and distances, when they go into the interior. The atmosphere on the high table lands of Mexico, greatly deceived our engineers. Mountains, rocks, and houses, that appeared to them to be but a short distance away, were frequently found as if receding before them, like the shadow of a traveller who is journeying to the east of the setting sun. M. Guizot, the prime Minister of Louis Phillip, was induced by representations of great commercial houses in Paris, based on information, as they asserted, derived from an engineer, that a thorough cut of forty feet would unite the Pacific and Atlantic oceans, through the Isthmus of Panama, to despatch a scientific engineer to verify that astounding intelligence. So far from this being true, the lowest summit found by Mr. Garella turned out to be three hundred and ninety feet above high tide, and that was not suitable for his purpose. After all then, science which is the deductions of observation and reason, is well applied by civil engineers, to correct what may be termed 'the mere impressions conveyed to the mind by the organ of vision.'

Scientific Memoranda.

Sir James Murray states that grave-yards, near cities, is detremental to health, because the decomposing going on in them deranges the electrical state of the atmosphere. In Belfast, Ireland, there was a grave-yard where he frequently demonstrated the difficulty of producing sparks by a machine, and the people who reside near it could not be sufficiently electrified. A magnet that would support 50 lbs. in other situations, could with great difficulty support only 10 lbs. in such situations. He believes that negative electricity pervades grave-yards.

GREAT HYDRAULIC PRESS.

The greatest Bramah press that ever was constructed was made and used for the elevation of the tubular bridge over the Menai Straits. The cylinder of it is eleven inches thick, its piston is 20 inches in diameter. Its weight is 16 tons, and the whole press 40 tons. Its power of lift is equal to 30,000 men, and it can spout water 20,000 feet high. Water is called "weak," but science has chosen it to overcome the mighty, for by two streams of water the mighty tubes, weighing as much as some of our finest ships, (1,300 tons), were lifted 100 feet high, and placed firm on their foundations.

CHARACTERISTICS OF GOLD.

Gold is soft and completely mallable. It is softer than iron, silver, or copper, but harder than tin or lead. It can be easily distinguished from a mere ore, by submitting to the hammer, or simply by beating it with a stone. A small spangle is easily scratched with a piece of silver, copper, or iron, but it will scratch tin or lead. It also sinks quickly in water, and by using what is called black china, and drawing the gold across it to make a scratch, its quality, with a little practice, can easily be determined. If gold dust is placed in a tube of glass, and a little nitric acid poured amongst it, the liquid will soon become green, if there are any brass filings amongst it. Nitric acid will not act upon gold to dissolve it, but a small quantity of muriatic acid along with it, will make it do so.

THE COLD IN THE ARCTIC REGIONS.

In the inside of one of Capt. Parry's ships, when on his voyage to the Arctic Regions, 600 galls. of ice were formed on its sides in the the course of four weeks, just from the breath of the men, and the steam that was evaporated in cooking. What a region to expend so much money and valuable lives upon, in the search of a North West passage.

HOW CRONOMETERS ARE TRIED IN ENGLAND.

Chronometers, offered to the British Government to purchase, are placed in the Greenwich Observatory in the first or second week in January, and ranged in shelves round the cronometer room, and each is daily compared with the astronomical clock, and its rate carefully noted. This is continued until the middle of July, during which time the temperature of the room is much varied. In the coldest weather the room is thrown open, so that it is as cold inside as out; and in summer the change is all of 70° of difference. The chronometers are also submitted day and night for about six weeks to 80 degrees heat, raised by fire. This is the usual trial.

MORTALITY IN LONDON.

In spite of the great amount of suffering and misery in the great city of London, and in spite of all the hue and cry about the times getting worse, we are inclined to believe that every generation is too ready to magnify the good things of the past, and forget the evil.

If statistics are of any value at all in leading us to a correct conclusion respecting the condition of the poor in the days gone by, and those of the present day, we have an incontrovertable fact in the statistics of London mortality, to prove, all things considered, that the condition of the poor at present is not so bad, as what it was one century ago. In 1700, the average yearly mortality in England was 1 in 25, but now it is only 1 in in 45, and 1 in 40 in London. The chances of life are nearly doubled. Does not this fact demonstrate more true political knowledge than 500 long winded demagogue speakers. But we are not to stop here. It cannot be denied that misery and crime exist in a fearful state there, and in every large city; and it is the duty of those who can to labor for its removal—to relieve the distressed, and to search out measures to prevent it. The great question is, "What is the best remedy." There are many different opinions upon this subject, but none as to the duty to relieve cases of suffering, promptly and unhesitatingly. "The righteous giveth and desireth not again."

THE UNIVERSE IN MOTION.

Could our visions be made so acute as to view the progress of nature for one year, at a single glance, we should behold no repose in the heavens, and no sleep in the earth. This globe and ten thousand starry hosts, would appear before us, rushing like steeds on different courses. We would be enabled to look into an humble grain of wheat stirring itself in the bosom of the earth, then rearing its head, and anon wearing a golden crown, when its course was run. The flowers would appear to us moving upwards from the grassy turf, then dancing to the breeze, and anon flinging their perfumes abroad upon the gale.

Plundering the Inventor's Fund.

It is well known that $50,000 was voted last year to erect the new Patent Office. This sum was taken out of the Patent fund—the accumulation of money paid into the treasury by inventors. It is now contemplated by the Committee of Ways and Means to report the application of $100,000 more to finish the edifice. This would all be very well if the building was used only for the benefit of inventors and the promotion of the arts; but the new offices are partly to be used for the Home Department. It is a scandalous shame to use the funds of the Patent Office for other purposes than the benefit of inventors and the advancement of the Arts and Sciences.

Transactions of the N. Y. State Institution of Civil Engineers.

We are much indebted to Mr. Samuel McElroy, C. E., of Albany, for Part 2 of the above mentioned Transactions. This Institution bids fair to be a "shining light" in our State. The work before us contains much useful scientific information. It contains a good article, with engravings, from the Report of the Erie Canal Commissioners. It contains a good paper on "Water Cements," by H S. Dexter, C. E., and another, of no small importance to Civil Engineers, on the Quicksand Excavation of the Deep Cut of the Genesee Valley Canal.

Notice.

The article on Mr. James Frost's pamphlet, which was to be continued from our last number, is left out this week, owing to the long and important article on the Great Dam at Hadley Falls. This is a necessity, but we shall finish the article referred to next week.

On Saturday the 23d inst., Edward Lucas, the fireman at Birbeck's foundry, in Brooklyn fell from a ladder into the engine pit, and was crushed to pieces. It is said that he was the worse of strong drinks.

We are much indebted to Mr. J. Delafield for a copy of the proceedings of Seneca Co. Agricultural Society.

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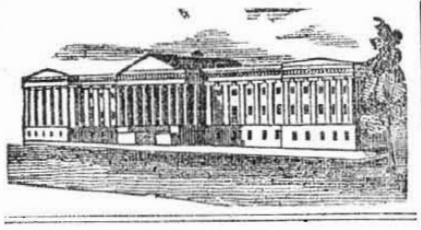

LIST OF PATENTS CLAIMS

ISSUED FROM THE UNITED STATES PATENT OFFICE,

For the week ending February 23, 1850.

To J. L. Allen, of Syracuse, N.Y., for improvement in elevating and lowering carriage tops.

I claim connecting a handle, lever, or any analogous device upon the inside of carriage tops, with joints or jointed braces upon the outside of the same, substantially in the manner and for the purpose set forth above.

To E. S. Clark, of Suffolk Co., Mass., for adjustable rollers for window curtains.

I do not claim the confining the end of a curtain or piece of cloth to a roller by means of a groove, and a strip of wood or other substance placed and fastened therein; but what I claim is my improvement in the construction of the curtain roller, whereby I do not only attain all the advantage of securing the cloth to it by the groove and strip, but am enabled to regulate or adapt the roller to any ordinary width; my said improvement consisting in making the curtain roller and its guide heads in two parts in such manner that the grooved section of the roller, and one head shall be united together and form a seperate part, while the other section or tongue, and the other head shall also be united and constitute another part; the two parts being so applied that when put together the tongue may be slid or fitted endwise in the groove in the manner described, such a combination of the heads and groove, and tongue sections enabling me to cut each section to the length required, and to readily adapt the roller to a window.

To T. G. Clinton, G. H. Knight & E. H. Knight, of Cincinnati, Ohio, for improvement in lids for boiler holes of Cooking Stoves.

What we claim is, firstly so arranging the lid (centre plate) in connection with the top plate of the stove, as that the lid when withdrawn from the opening, may be made to add its area to, and at the same time lie flush with or below the level of the top of the stove; this being effected by a neck proceeding from the lid in the direction of its plane, said neck (whether the lid or centre plate be closed or folded back) filling a notch in the stove top, and having lugs projecting from its sides, which lugs bearing upwards against the top plate, or against shoulders projecting therefrom, sustain the lid when folded back.

Secondly, The arrangement substantially as described, of journals on the neck at or about midway of its length, forming a fulcrum upon which the lid can be folded back, either with its top face or with its flue face uppermost, the lugs in this case being behind the journals, and midway of the thickness of the neck.

Thirdly, Constructing the lid with a handle projecting therefrom in the direction of its plane, and at its coldest point so as to afford a means of operating the lid by hand, with comparative impunity and facility,—and so as to avoid, on the one hand, any impediment to the shifting of the cooking utensils, and on the other hand the usual cavity difficult to mould, liable to collect dirt, and placed unavoidably at the hottest part of the lid.

To S. Goddard & H. Warfield, of Truxton, N. Y., for improvement in raising and lowering carriage tops.

We do not claim the use of levers or handle upon the inside of carriage tops, connected with the jointed braces upon the outside, for the purpose of working the braces, but we claim connecting the jointed braces upon opposite sides of carriage tops, by means of a shaft or rod passing back of the seat, in such a manner, that the braces may be worked simultaneously upon both sides substantially as herein described.

To H. Hochstrasser, of Philadelphia, for improvement in locking portable safes to the floor.

I claim the device for locking down a portable safe or box to the floor and at the same time locking the box as described and shown herein.

To E. M. Pomeroy, of Wallingford, Conn., for improved process of varnishing buttons.

I claim the process of japanning and baking the buttons in bulk substantially as is herein before described, after they have been prepared for the reception of a smooth coat of japan or other varnish, in the manner specified in my former letters patent respectively or in any other method substantially the same.

To P. M. Purdy, of Haysville, Ohio, for improvement in Portable Fences.

I claim fastening together the panels of portable fences substantially as herein set forth by means of binding irons, and wedges.

To A. R. McGriff, (Administrator of Joseph Pollock, deceased,) of Richmond, Ind., for improvement in hulling clover-seed.

I claim the arrangement and combination of the cylindrical cups (four) with each other for the purpose of discharging the grain at C, and the lighter meterials at O, as herein described.

To H. N. Rider, of Adams, Mass., for improved method of kneading dough.

I claim the combination of a reciprocating kneading table, with a reciprocating breaker, substantially as herein set forth, but irrespective of the devices by which they are severally put in motion.

To O. Ramsdell, of Westfield, Vt, (Assignor to J. B. Sawyer, of Monson, Mass., and S. Sawyer, of Templeton, Mass.,) for breast-plate for harness.

I claim the centre draft and expansion breast plate for the horse harness, in combination with the use of the double fulcrum self adjusting pad, applied either to the double or single harness as set forth.

To R. Ramsay, of Wilmington, Pa., for improvement in Bedstead Fastenings.

I claim the employment of bush pieces locked by the key pieces, in the manner and for the purpose set forth herein.

To Isaiah Subers, of Philadelphia Co., Pa., for improvement in Fences.

I claim the method of constructing a self adjusting and self-fastening fence of any material whatsoever, substantially such as herein described, the parts of which when put together, fasten themselves firmly by means of a combination of locks and chairs, substantially as described, without the use of lead, screw-bolts, wedges, or any other of the modes heretofere adopted and used for the purpose.

To C. A. Wakefield, of Essex Co., N. Y., for improvement in Seed Planting Barrows.

I claim the employment of the gauge plate of variable thickness in combination with the moveable tube and face plate, and its spring, the same being applied to the hopper and conducting tube, leading in to the furrow opener, and the whole being made to operate substantially as specified.

To C. A. Wakefield, Essex Co., N. Y., for improved Seed Planter.

I claim the combination of the curtain or apron with the cylindrical or broad cast regulator.

I also claim the manner of constructing the regulator, or in other words, the combination of the prism, with the side plates or boards and their adjusting and confining mechanism, as set forth.

To H. Wood, of New York, N. Y., for improvement in burning ornamental figures upon wood.

I claim first, the method I have described for constructing the mould or dies so as to allow for the excessive depth they will charr the wood in certain parts of figures, in order that the whole figure when finished, shall be an exact resemblance of the original.

Secondly, I claim the channels or other like devices cut in the face of the dies, for escape passages for the gases, smoke, &c.

Thirdly, I claim the use of an alkaline and acid solution, or baths, to aid the removal of the charred surface.

I do not claim branding or the production of uneven surfaces or fingers by a hot metal mould pressed upon wood, but the several improvements as above claimed on the art within described.

To J. G. Webster, of Middlesex Co., Mass., (Assignor to J. W. Robertson & J. G. Webster, of Lowell, Mass.,) for improvement in measuring cloth on Looms.

I am aware that a roller or cylinder and clock work have been combined and used for indicating the length of any surface against which the periphery of the said roller might be placed and rolled, such a contrivance being generally known by the name of way metre, carriage metre or pedametre. I am also aware that a roller, cylinder and pencil marking apparatus have been applied to the cloth beam of a loom in order to mark into equal lengths or parts the cloth woven upon the said cloth loom. I therefore neither claim such contrivances nor the method by which they have been applied and used. But what I do claim as my invention, is the arrangement of the roller and clock work directly upon the breast beam of the loom and with respect to the cloth or selvage thereof as specified.

To R. H. Green, of Poultney, Vt., for improvement in Seraphines.

I do not claim the use of wooden sounding reeds, abstractly; nor the adjustable blocks, nor the conbination of duplicate blowers with a keyed reed instrument. But what I do claim is, 1st, The combination of wooden sounding reeds with wooden reed plates, constructed in the manner herein decribed;

2d, The combination of the adjustable blocks with the duplicate blowers and the lifting rods arranged as herein described, and

3d, The combination of two sounding boards and the piano board with the sounding reeds and keys arranged in the manner and for the purpose herein set forth.

DESIGNS.

To J. H. Conklin, of Peekskill, N. Y., (Assignor to S. B. Sexton & Co., of Baltimore, Md.,) design for Stoves.

To J. D. Green & G. Warren, of Troy, N. Y., for design for Stoves.

Awful Ride on a Railroad.

One of the most interesting railroad incidents, says the Boston Herald that has happened lately took place on Tuesday, on the Maine road.

On starting from the depot in this city, an Irishman thought that he could save the price of his passage by stowing himself away under the cars, between the truck and the car floor—a space barely sufficient to admit a man's body, the lower part consisting of the joints running lengthwise of the cars. In this confined compass Pat stowed himself. The cars started, and the "free passenger" for a time exulted in the trick. Soon the speed began to increase—faster and faster went the train—and colder and colder the wind rushed though the aperture. Then the son of Erin began to experience those awful sensations previous to death by freezing. His hands by which he had held his body in its position, became, benumbed, and he was momentarily in expectation of falling from his place of concealment and being crushed under the wheels. After traveling about thirty miles in this way, he began to knock with his heels upon the car floor. The passengers became alarmed, not knowing from what cause the unusual sound proceeded, and presumed it was the precursor of some accident. Arriving at Rowley, the cars were stopped—yet the knocking continued, but with less force, for Pat had almost lost his consciousness. An examination was at once instituted, and, after a lengthy search, the unfortunate traveller was found as above described, severely frostbitten and so benumbed with cold that he could not for some time articulate a word. It appeared that he was bound for Newburyport the fare for which place is but eighty cents, and when he became somewhat revived he declared it was the hardest day's work he ever did. No doubt of it.

Discoveries in Ancient Nineveh.

Letters from Nimroud of November 25th, inform us of the progress of Dr. Layard's researches. A wall of of admirably united large square blocks of limestone, without cement, has been discovered in the pyramid at Nimroud,—but as yet it has been impossible to ascertain what is behind it. It may be probably a chamber or tomb, or may be only the side of a square mass supporting the pyramid of unbaked bricks. What if it should turn out to be the true *busta Nini*? In the entrance of a gateway to the quadrangle opposite Mosul, Dr. Layard has reached a pair of enormous winged figures which appear to be entire, but have been cracked and injured by fire. A plan of this would be interesting as illustrative of the architecture of the city. At Kouyunjik a pair of gigantic bulls, back to back, separated by an enormous figure strangling a lion, like that at Paris, but larger, have been discovered; but the upper parts of all have been destroyed. On the bulls are interesting inscriptions. We are glad to hear that the colossal lions at Nimroud were nearly ready for removal. It was expected that they would be on the road to England early in December. Dr. Layard has a party of men excavating at Baashickhah and in a mound near Khorsabad.—[Athenæum.

The True Defence of Nations.

The bulwark of America is not the army and navy of the United States, with all the men at public cost instructed in the art of war; it is not the swords and muskets idly bristling in our armories; it is not the cannon and powder carefully laid by; no, nor is it yet the forts, which frown in all their grim barbarity of stone along the coast, defacing the landscape alse so fair, these might all be destroyed to-night, and the nation be as safe as now. The more effectual bulwark of America is her schools. The cheap spelling book, or the vane on her schoolhouse is a better symbol of the nation than "the star-spangled banner;" the Printing Press does more than the cannon, the Press is mightier than the sword. The army that is to keep our liberties—your are part of that, ye noble army of Teachers. It is you, who are to make a nation greater, even wise and good, the next generation better than their sires.

Every Woman her own Dressmaker.

Every woman should be a dressmaker; she should be instructed in the anatomy and physiology of her system, and be perfectly able to give a correct outline of a classical figure, and its appropriate dress, on the black board. She should then be instructed to cut her own dresses in a simple and elegant manner, and adapt them to her figure, so that not the least pressure should exist on any part of her person.

So much is now due to an incorrect and servile taste in dress, that it is one of the principal causes of the early decay of our countrywomen. Our climate demands, during one third of the year, absolute warmth and dry feet; and our fashionable countrywomen would consider themselves disgraced by appearing in public, with a dress and shoe that every Englishwoman wears as a matter of course.

Remarkable Recovery.

Thomson a young colored man who was shot in the murderous riot at the house of the Wm. Hose Co., of Kingston Pensylvaina, on the morning of the 29th of November, and shockingly wounded in the head, is still alive, and there is at present every indication of his entire recovery. The ball entered the skull at the eye, and, as probings have shown, penetrated inwards; but farther than this there is no positive evidence of what became of it. The belief is that it must be somewhere in the head, yet the exact spot of its lodgment—whether in the brain, or the inner portion of the cranium bone—cannot be discovered. The man when first brought into the hospital, was insensible, and lay more than a month in a state of stupor. The sight of the eye, injured by the wound, was destroyed, and one side of the body was temporarily paralyzed. A considerable quantity of the brain was also discharged. Finally, the sufferer began to revive. Sensation and reason gradully returned. The external wound was healed over—and he is not only able to sit up and converse, but he eats heartily, walks about, and is apparently, getting as well as ever he was.

Mode of Fixing Pencil Drawing.

Dissolve pale resin in spirit of wine; lay the pencil drawing on its face upou a sheet of clean paper, and brush the back of the drawing with the solution. This penetrates through the paper in a few minutes, and as the spirit evaporates, the resin is deposited as a varnish on the drawing. This has the advantage of not cockling the paper, which aqueous solutions will do; and as the brush only passes over the back of the drawing, none of the pencil marks are in any degree removed. This process will not answer with drawing on card, or any other substance too thick to be penetrated by the solution. In this case a weak solution of isinglass may be placed in a shallow dish, the drawing being passed through it so as to wet every part without touching it with a brush.

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TO CORRESPONDENTS.

"W. H. S., of N. Y."—It would appear to us according to the statement, that your rights are being infringed. The only course now left is to seek redress by law. It is not probable that the Commissioner would give two different patents for the same invention. We know of none. The expense of a cut in the Sci. Am., would be $8,00

"W. R. H., of Wis."—We do not understand your views. The description is altogether too vague, and requires to be made more clear before we can pass an opinion upon it.

"J. S. S., of Ohio"—We cannot pass an opinion upon the merits of your invention without the opportunity of examining a well described drawing, which you had better forward.

"F. S. J., of N. Y."—The same kind of spring has been applied about the same way in railroad cars, and this would prevent you securing a patent.

"L. W. H., of N.Y."—Your improvement on the syphon is a good one, and makes it a very convenient instrument; and so far as we are able to judge, and we think we are safe in what we say, "it is entirely new."

"J. P., of Mass."—Your door gutter is new to us. We understand your drawing perfectly. We believe that it may be patented.

"A. D. P., of Ohio"—We forwarded you a bound volume 4, by express, on the 21st. There is 25 cts. more due us upon it. You will see that we sell them for $2,75.

"L. W., of Ind."—We think it would require considerable less than one horse power to work the machine referred to. We cannot tell the cost of putting one in operation. This information could be obtained from the inventor. $3 received.

"W. F., of R.I."—A patent could be secured on a safety gauge if it is new. We cannot decide upon this as you do not describe it.

"L. B. F., of Ill."—Your grain separator, so far as we can judge, is both original, good and patentable.

"S.P., of Conn."—Your plan of the breech-loading fire-arms appears to be the same as that of the Philadelphia one, which is now in use for some years. We know of no metal for the tongues, to resist the tin, except it may be platina, but of that we are not positive. We only reason on the probability, from a knowledge of its qualities.

"A. N. D., of N.Y."—There are no tickets for sale through to San Francisco at present for any price. The books of Mess. Howard & Son for the May steamer will be opened on the arrival of the "Empire City," next month, and not before. All the tickets for April are sold, and until the Empire City arrives the books for the May steamers will not be opened.

"A. A. W., of N. Y."—The drawing of your wheel has been examined. By reference to page 329, vol. 2 of the Sci. Am., you will find an engraving of Mr. Newcomb's self-acting wheel, it varies somewhat in the mechanical construction, but the principle is the same.

"G. G. D., of R. I."—The combination of the bit and square chisel is an old device, and not patentable. No. 6 sent and $1 credited.

"W. P. B., of Geo."—Mr. Mifflin informs us that he is now getting out a new edition of his work on R.R. Curves, considerably improved.

"W. W. of Philadelphia"—We cannot advise you without a drawing. Please send one, and state what you desire to claim in the matter.

"E. O. A., of Ct."—We stated some time since that Parker recovered in the Philadelphia trial. The damages were small.

"R. P., of Mass."—If B. should construct his machines from your model, and without your consent, after the patent was granted, you could stop him from using them. The testimony of disinterested parties would be allowed to prove priority of claim.

"O. D. R., of N.H."—Your letter reached us in time, and the business will meet prompt attention.

"H. S., ——."—It would require more time to explain how the battery is made than we can spare.

"J. P. A., of Mass."—There are several patents on friction matches that we know of. They have been in use in this country for many years, and are manufactured in different ways.

"T. H. H., of Maine"—You must present drawings and a description of your inventions before we can give an opinion regarding them. The question is not what they can do, but as to whether they are new or not.

"C. B. D., of N.Y."—Mr. Reuter, of Philadelphia, commenced the publication of a work devoted to locomotives. We have not seen a number lately, and think it must have been discontinued. We think only two numbers were issued. $1 received.

"S. G., of C. W."—Your ideas regarding waste heat are good, but not new. The same principle is employed in the dry house of the Woolen Manufacturing Company, Wales, Mass. In fact, we may say that the principle is in common use in the manufactories in this region. We cannot say that it has ever been applied to the purpose of baking cores. It could not, however, be patented for that purpose.

"J. M. W., of R.I."—We are not prepared to answer your letter. You will at once see that we cannot be aware of your having any jurisdiction over the matter, inasmuch as Mr. A. made no mention of it.

"A. S.,of Pa."—Your "mill-bush" has been examined, but is found to be the same as the invention of Mr. B. Ashley, of Watertown, now before the Patent Office. You could not obtain a patent for it.

"A. G. F., of Mass."—We cannot answer your question now, but will do so if the information can be obtained.

"J. C., of N. Y."—Your papers were amended according to your suggestions and forwarded to the Patent Office. You can go on and manufacture now with perfect safety. The Letters Patent, when granted, will be sent to you directly from the Patent Office.

L. A., of Conn.; S. A. P., of Conn.; E. F. W., of Conn., and J. C., of N. Y.—

Your specifications and drawings have been forwarded to the Patent Office since our last issue.

Money received on account of Patent Office business, since Feb. 20, 1850:—

B. A., of Mass, $28; E. F. W., of Conn., $20; H. S. T., of N. H., $60; G. H. T., of N. C. $75, and C. B. N., of Ga., $30.

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Patent Office.

128 FULTON ST.

NOTICE TO INVENTORS.—Inventors and others requiring protection by United States Letters Patent, are informed that all business relating to the procuration of letters patent, or filing caveats, is transacted at the Scientific American Office, with the utmost economy and despatch. Drawings of all kinds executed on the most reasonable terms. Messrs. Munn & Co. can be consulted at all times in regard to Patent business, at their office, and such advice rendered as will enable inventors to adopt the safest means for securing their rights.

Arrangements have been made with Messrs. Barlow and Payne, Patent Attornies, in London, for procuring Letters Patent in Great Britain and France, with great facility and dispatch.

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128 Fulton street, New York.

BARLOW & PAYNE, Patent Agents and Consulting Engineers, 89 Chancery Lane London
m12 tf Patent Journal Office.

THE GRAEFENBERG MANUAL OF HEALTH.—The Manual of Health just published by the Graefenberg Company, 7 parts, 300 pages, 12mo. This is the most useful and comprehensive, as well as the cheapest medical work extant, and should be in the hands of every family. Part 1st contains an account of the different medical theories of the present day, both good and bad, and their relation to the health of the community. Part 2d presents a new doctrine: The Americo-Graefenberg System, which need but be understood to command the confidence of the whole community. Part 3d describes the causes, symptoms and treatment of almost every form of disease, including those diseases peculiar to females and children, useful to all classes, even to physicians, as a hand-book. Part 4th contains important directions for preserving health, &c. Part 5th, Hints for Nurses, treatment of persons recovering from sickness, cookery for the sick, &c. Part 6th, Domestic remedies described, including mode of raising and preserving medicinal roots, &c., making lotions, poultices, colognes, cosmetics, &c. Part 7th contains a collection of useful tables, recipes, &c. For sale at the office of the Graefenberg Co., 50 Broadway, and by booksellers generally. Price 50 cents. Liberal discount to dealers.

NOTICE TO POSTMASTERS.—As it is the wish of the Company to distribute this work extensively, any Post Master forwarding $2 for four copies shall be entitled to one copy gratis. tf

VERY IMPORTANT.—To persons owning a mill privilege on a small stream of water where they can obtain 24 feet or more fall in a short distance—about 35 feet is preferred—the subscriber will furnish a motive power and fixtures which is acknowledged by all who have seen the operation not to be excelled. A specimen can be seen in the South East part of the town of Canaan, 6 miles from Falls Village, and in the South part of the town of Washington, Berkshire Co., Mass., 8 miles East of Lenox Court House, and in the Shaker Village of New Lebanon, Columbia, Co. N. Y. It is simple in its construction and very permanent and durable. It is peculiarly convenient for a common sawmill. I commonly use about 12 square inches of water for a sawmill and make it saw 100 feet of boards in ten minutes.

For further particulars enquire at the office of the Litchfield Enquirer, by letter to the subscriber directed to Falls Village, Litchfield County Conn. or to Daniel Copley New Lebanon, Columbia Co., N. Y. I have also a very important improvement for the Saw frame and the pitman irons, which I warrant to excel all others.

☞ The very best of reference and information will be given on request by letter or otherwise. All letters must be post paid.
4*22 HENRY WIGHTMAN.

ANNUAL OF SCIENTIFIC DISCOVERY, or Year Book of Facts in Science and Art—Exhibiting the most important discoveries and improvements in Mechanics and Useful Arts, Natural Philosophy, Chemistry, Astronomy, Meteorology, Zoology, Botany, Mineralogy, Geology, Geography, Antiquities, &c. Together with a list of Recent Scientific Publications; a classified list of Patents; Obituaries of Eminent Scientific Men; an Index of important papers in Scientific Journals, Reports, &c. Edited by David A. Wells, of the Lawrence Scientific School, Cambridge, and George Bliss, Jr.

The Editors are so situated as to have access to all the scientific publications of America. Great Britain, France, and Germany; and have also received for the present volume, the approbation as well as the counsel and personal contributions of many of the ablest scientific men in this country, among whom are Profs. Agassiz, Horsford, and Wyman, of Harvard University.

As the work is not intended for scientific men exclusively, but to meet the wants of the general reader, it has been the aim of the editors that the articles be brief and intelligible to all.

The work will be published early in March, and will form a handsome duodecimo volume of about 380 pages, with a portrait of Prof. Agassiz. As the edition is limited, those desirous of possessing the first volume of the publication, must make an early application. On the receipt of one dollar, the publishers will forward a copy in paper covers, by mail, post paid.

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TO PAINTERS AND OTHERS.—American Anatomic Drier, Electro Chemical graining colors, Electro Negative gold size, and Chemical Oil Stove Polish. The Drier, improves in quality, by age—is adapted to all kinds of paints, and also to Printers' inks and colors. The above articles are compounded upon known chemical laws, and are submitted to the public without further comment. Manufactured and sold wholesale and retail at 114 John st., New York, and Flushing, L. I., N. Y., by
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TO RAILROAD COMPANIES, ETC.—The undersigned has at last succeeded in constructing and securing by letters patent, a Spring Pad-lock which is secure, and cannot be knocked open with a stick, like other Spring locks, and therefore particularly useful for locking Cars, and Switches, etc.
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Scientific Museum.

For the Scientific American.

Tanning--Practical Remarks.

(Continued from page 184.)

Tanneries are, or should be, erected on streams of abundant pure water, and in this age of improvement, convenient to a canal or railroad leading to the metropolis. Ample water power at all seasons is a great consideration. Steam power is used by some as auxiliary aid, where their water power is insufficient, with great profit. Entire dependence on steam power, exposes the stock to great risk of damage, in case of accident; the business must all stop and few tanneries are convenient to the machine shop.

The process begins in the beam house before alluded to. A platform for beams, (the tanners work-bench) laid one side of the room, inclined towards the wall, to carry off the water upon which a row of beams are placed facing the light, (and it should be a strong light.) A floor of plank crowning in the centre of same length, from 12 to 16 feet wide, is placed in the middle, and a row of vats or pools are arranged on the other side of the size and depth before given. A small stream of water usually brought from the main trunk, which supplies the machinery in logs, (pure spring water is preferable) is allowed to run constantly into the head pool, and by a connecting pipe or tube, between each pool on the desired surface, the whole row is kept full and fresh, until it passes off into the wheel pit. Underneath all the vats and pools, a line of pump logs 3 inch bore are carefully laid with a flat surface and water joints. They should fit the bottom of the vat at one end, and be connected to it by a tube 2 inches bore, at one corner, into which is inserted a long plug, reaching to the top of the vat. An eye board, or a board perforated with augur holes nailed across the corner of the vat, protects the plug from the contents of the vat. The liquid matter is let off, by starting this plug, whenever required. Hides are taken into the beam house and cast into a pool regularly every week day, when a tannery is in full operation, a given number, where they remain 24 hours: they are then hauled up and spread on the floor, split into sides by running a knife rapidly along the back, from the butt to the pate, and again cast into a pool. They lie soaking one or more days, (as is the temperature of the water), when, in a proper state, they are hauled up again and put into the hide mills, 15 to 25 sides to a mill, where they are pounded or milled until they are quite soft—usually 4 to 6 hours. The mills are constructed so as to allow the mass of hides to revolve at each blow of the hammer. When taken from the mill, if any of them are damaged it will be apparent. They are then wheeled into the sweat pit, and are suspended on poles or hooks, so as to leave all the hair exposed to the atmosphere—the sound hides in the back end, the tender ones near the door. When the pit is full, the door is closed upon them. The natural temperature of the pit should be 45°, —the temperature of the earth at that depth below the surface. If it ranges below 55°, the openings above and below are closed, and the heat decreases. If above 55°, the amount of air is made to pass through the openings, and if required, dashes of water are thrown over the sides. The operator, or chore-man, watches the process day and night; when he finds the hair slip freely (from 3 to 6 days) he takes them out of the pit, and either carts them into a pool of the coolest water he can command, or puts them at once into the hide mills, where, with milling and a small stream of water running on them also, they, in 3 or 6 hours are washed and rubbed comparatively clean,—as fair as a white kid glove. He then casts them into the head pool of fresh water, from whence they are drawn by the beamsmen, and spread over their beams. All the particles of flesh are worked off by the beam knife and the short hairs and remnants of hair still adhering to any part of the grain, is shaved off by the razor edge of the short knife (a huge cook's knife, 12 or 13 inches long), when they are stamped with the No. of their invoice and cast into a pool of clean water, ready to be sent forward into the handlers as fast as a full pack is worked. By the old process of liming the hides prepared or made soft in the same manner, were carried through a series of weak and strong decoctions of lime and water, the juices of the hide were destroyed by the alkali, the fibres only were left. By the new process the juices remain in the side, and absorbing their own weight of tan, they make a firmer, heavier and more durable article. The shoemaker dislikes to see it, it works so hard and lasts so long: while he of the pegs finds an article which will hold his work, and if the sole is too heavy he can pass it through his splitting machine, and make an inner and outer sole of the same piece, which will ensure an early call to the cobler or the shoe-shop,—"a word to the wise," &c. We shall continue the subject in our next.

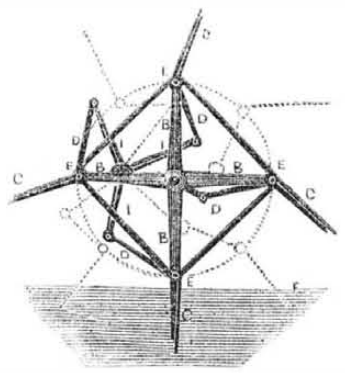
History of Propellers and Steam Navigation.

[Continued from page 184.]

GALLOWAY'S PADDLE WHEEL.

Almost every person has heard of "Morgan's Paddle Wheel;" the honor of the invention belongs to Elijah Galloway, the author of a very valuable history of the "Steam Engine." The object of Galloway's invention was like that of many others, viz., to provide a remedy for the loss of power and other inconveniences arising from the oblique position in which the paddles enter and leave the water.

Fig. 24.



This engraving represents his invention, for which a patent was secured in 1829. Each paddle turns on an axis through the medium of projecting levers, firmly fixed to the paddles at their axis of motion, and connecting rods proceeding from these levers to the extremity of a fixed crank, adjustable at a given distance from the centre of motion of the paddle wheel, which consists of four radiating arms connected at their extremities by strengthening braces.

B B represents four arms radiating from a central axis the extremities of which E E, are connected by bracing rods from one to the other. C C, are the paddles, firmly fixed to which are the levers, D D, forming angles of about 120 degrees with each other, and turning together on axes at E E; F, represents the water line; G is the crank, fixed centrally to the axis of the wheel, but so as not to revolve with it; this crank is alterable at pleasure by means of a set screw, which causes the paddles, through the medium of the connecting rods J I I, to take such angle with the water line, as may be deemed most desireable for propelling; the rods I, however, are connected to a revolving collar on the crank, which allows of their free rotary motion, while it draws the paddles uniformly into the positions shown in the engraving, when the arm of the crank is set in a horizontal position, as represented. The dotted lines show the position the paddles assume in the intermediate parts of their revolution, or the relative position they would take, if there were eight paddles attached to the wheel.

The difference between the "Galloway Paddle Wheel," and the "Morgan Wheel," consists in one simple point, viz., the axis of the paddles above pass through their ends; in Morgan's the axis passes through the middle of the float. The real inventor is Galloway, but these wheels have been too highly extolled, in our opinion. They are complicated in comparison with the common wheel, and must be far more expensive to keep in repair. Seven vessels in the British Navy have been fitted with these kind of wheels, and some of the steam packets that run on the French coast. Two years ago an article appeared in the Scientific American, copied from a French paper, stating that two of these vessels often run at the rate of 30 miles an hour. We mentioned our doubts respecting the correctness of the statement, and since that time we have discovered that our doubts were well founded. The speed of the Firebrand a Flamer, fitted with "Morgan's Wheels," averages only 10.55 miles per hour. If there were any superior benefits to be derived from this kind of wheel, we would expect that they would have been placed in the most superior new British steamships of the Liverpool and North American Line, but instead of this being the case they are fitted with the old paddle wheel, and are superior in speed to any other vessels that have been built in England.

Electric Clock Illuminated Dial at New Orleans.

More than once we have suggested the idea of illuminating some of the dials of the public clocks in this city. It may be a long time before such an object will be accomplished, at least to all present appearances. But since New York has not had spirit enough to be the first city in America to adopt a good thing like this, it is satisfactory to know that some other city has had both the spirit and the stamina to do so—and a southern city, too, so we need not be boasting so much of northern enterprise. We learn that over the principal entrance of the Bank of Louisiania, N. O., a clock has been placed with an illuminated dial.

The New Orleans Picayune states that for many years it had been a great desideratum in mechanics to get rid of the cumbrous agencies by which the dial plates of clocks in churches, factories, and other large edifices, are illuminated. These were by means of exterior reflectors, which, besides being to a certain degree imperfect and subject to derangement, necessitated being drawn in and put out morning and evening, occasioning considerable labor. In the year 1845, M. Durey, a merchant at Havre, by a series of very ingenious experiments discovered a method, as beautiful as it is simple, for supplying the want that had been so long felt. He prepared a dial of plain glass, painted on it the hours and minutes in white, and placing a couple of strong reflectors in a square box, lined with black velvet, technically called a dark chamber, fixed the latter behind the dial, when the most beautiful effect was produced. He immediately applied for a patent, which was given unhesitatingly, and his invention was characterized as rich in outward show, beautiful in effect as to the distrbution of the light, and simple in contrivance. Most of the public edifices in Paris, now supplied with clocks have dial plates illuminated by these interior reflectors.

Since the St. Louis Cathedral, N. O., has been in the hands of the workmen for the purpose of being enlarged, the church-warden applied to Mr. Stanislaus Fournier, an eminent clock-maker, to put in complete repair the old clock of that edifice, and to furnish it with dials on the plan of M. Durey, illuminated by night with interior reflectors. He sent to Paris for a glass dial, in order to make an experiment before he proceeded to work on the cathedral clock. How he has succeeded may be seen every evening before the Louisiana bank, the directors of which institution having given him permission to exhibit his dial plate above their principal entrance.

This is a beautiful object to look at from the street but there is something still more interesting connected with it. This consists of the method employed for setting the hands in motion, which is by electricity.

At the bank of Louisiana there is nothing but the dial and the hour and minute hands; the clock is in Mr. F.'s store, where also is the galvanic pile from which the conducting wire leads to the bank, past the abjoining houses, and along which the electric current travels that moves the hands. A person standing in the street can see both by day and by night the progress of the minute hand, which moves every half minute.

This is the first public Electric Clock that has been erected in America, and New Orleans deserves great credit for what she has done in embracing new improvements in the arts. The glass or illuminated dial, without the cumbrous appendages of outside reflectors, however new it may have been in 1845 at Havre or Paris, is all of twenty years of age to our knowledge, with the exception of the dark velvet box behind, which is evidently a great improvement.

Improved Daguerreotypes.

A London artist has discovered a process by which daguerreotypes are rendered indelible. At present, though the producers of these photographic likenesses pretend that they will not, and that they must be hermetically sealed against the hostile invasion of sulphuretted hydrogen which makes the picture invisible under a rusty sulphuret of silver This London discovery is such that can be made to bear friction and hydrogen—resist every thing, in fact, short of sand-paper. It is also efficacious in the restoration of those old portraits which have become dimmed with rust. This is one of the pleasantest discoveries that has been made in the fine arts for a long time, if all reports are true, and we see no reason for throwing discredit on them. This is no doubt a great discovery, but not so wonderful as the art itself.

Steam Boiler Explosions.

In the Massachusetts Legislature, a motion has been made, that the Judiciary Committee consider the expediency of providing that stationary steam engines used for driving machinery, be placed in buildings separate from that in which the people connected with such establishments are employed. Also, whether any other legislation is necessary for the greater security of human life from the explosion of steam boilers.

The Winter in Europe.

While we have been enjoying a remarkably mild winter on this side of the Atlantic, in Europe, both at the North and South, the season appears to have been one of unusual severity. A letter from Florence of Jan. 5th says: "For the last forty years, the cold has not been felt so severely here as it is now. All the hills near the city are covered with snow, and the thermometer has been as low as 12 degrees of Reaumer, (10 2-5 degrees of Fahrenheit.)" Letters from the frontier of Italy state that the Convent of St. Bernard is entirely blocked up with snow; the monks have been obliged to cut a subterranean passage, in order to extricate themselves.

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